



**Canadian Air Force Establishment Analysis:**  
Creating a “meta-methodology” to address integrated questions of force structure,  
workforce planning and organizational design

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## Topics

- Workforce planning definitions
- The Canadian Air Force in perspective
- Problem statement
- Problem aspects/framing/approaches
- Existing tools and methodologies
- Challenges



## Workforce planning

“...is about getting the right number of people with the right set of skills and competencies in the right job at the right time”

Vernez et al (2007)

“To provide the *right* (required) number of the *right* (qualified) personnel at the *right* (specified) time at the minimum cost”

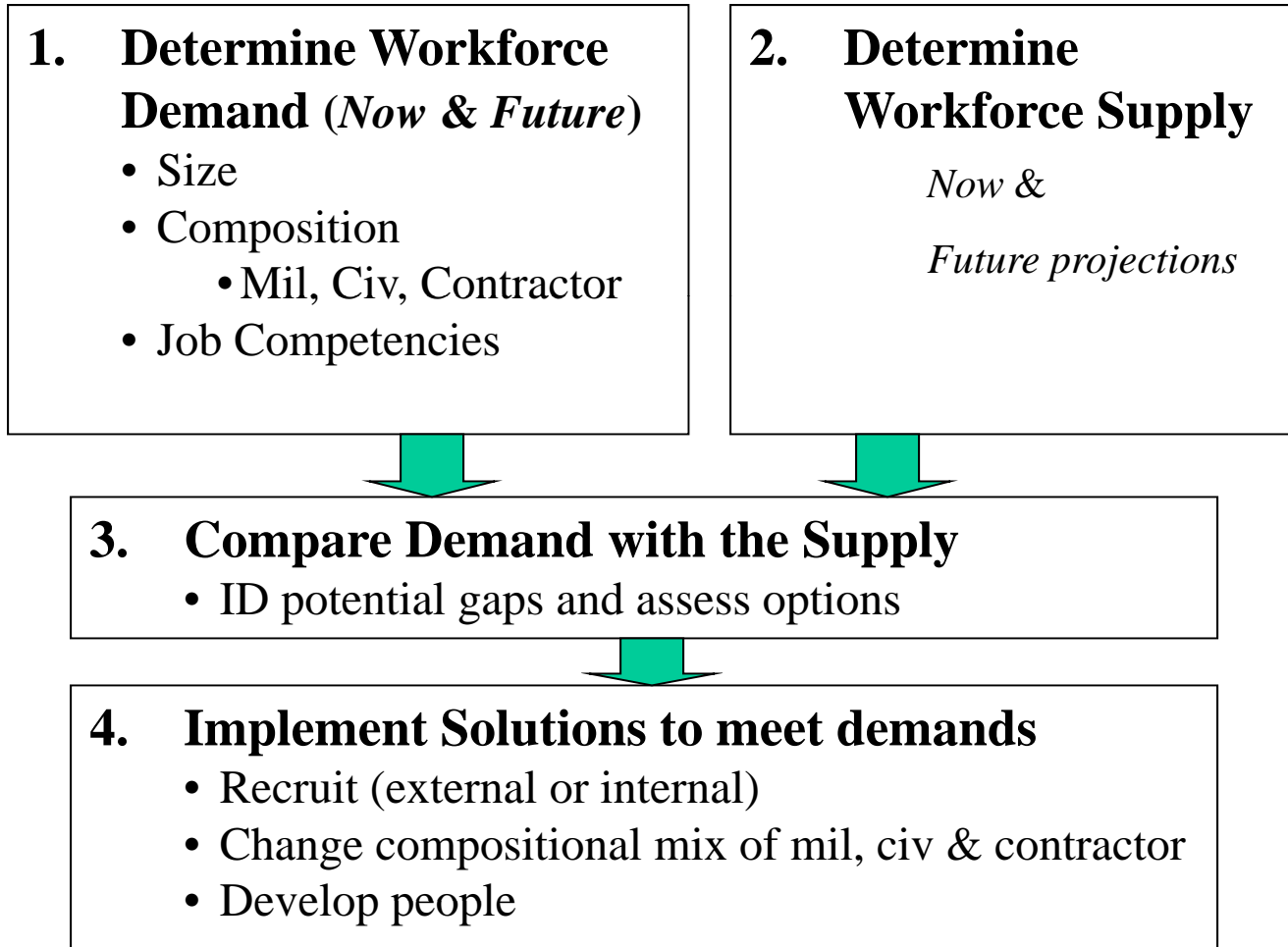
Wang (2005)

“...to ensure that the right people are available at the right places and at the right times to execute corporate plans with the highest levels of quality”

C.M. Khoong (1996)



## Workforce planning – Major Steps



Ref: *Workforce Planning and Development Processes: A Practical Guide*;  
Vernez, Robbert, Massey & Driscoll, RAND TR408 2007



# Workforce planning – Major Steps

## 1. Determine Workforce Demand

- Size
- Composition
  - Mil, Civ, Contractor
- Job Competencies

## 2. Determine Workforce Supply

## 3. Compare Demand with the Supply

- ID potential gaps and assess options

## 4. Implement Solutions to meet demands

- Recruit (external or internal)
- Chang compositional mix of mil, civ & contractor
- Develop people

Ref: *Workforce Planning and Development Processes: A Practical Guide*;  
Vernez, Robbert, Massey & Driscoll, RAND TR408 2007



# 1. Determine Workforce Demand

## 1. Determine Workforce Demand

- |  |  |
|--|--|
| <ul style="list-style-type: none"><li>• Size</li><li>• Composition<ul style="list-style-type: none"><li>• Mil<ul style="list-style-type: none"><li>• RegF</li><li>• Reserves</li></ul></li><li>• Civ</li><li>• Contractors<ul style="list-style-type: none"><li>• 2 categories</li></ul></li></ul></li></ul> | <ul style="list-style-type: none"><li>• Job Competencies<ul style="list-style-type: none"><li>• <b>Occupation</b> or Occ group or specialty</li><li>• <b>Rank</b></li><li>• Training &amp; Education</li><li>• Knowledge</li><li>• Skills</li><li>• Abilities</li><li>• Types of Experience</li></ul></li><li>• Language requirement</li></ul> |
|--|--|

Normally and w/Surges

Now & in Future





## Canadian Air Force in perspective: Fleets

- Air Command comprised of:
  - 13 Wings, 49 Squadrons across the country
  - 20 Aircraft fleets
  - ~ 333 Aircraft
- In Transition
  - investing in new capabilities
  - retiring or re-focusing of others

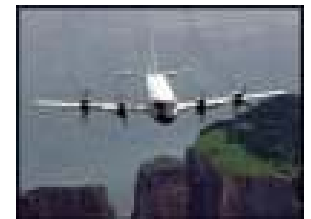






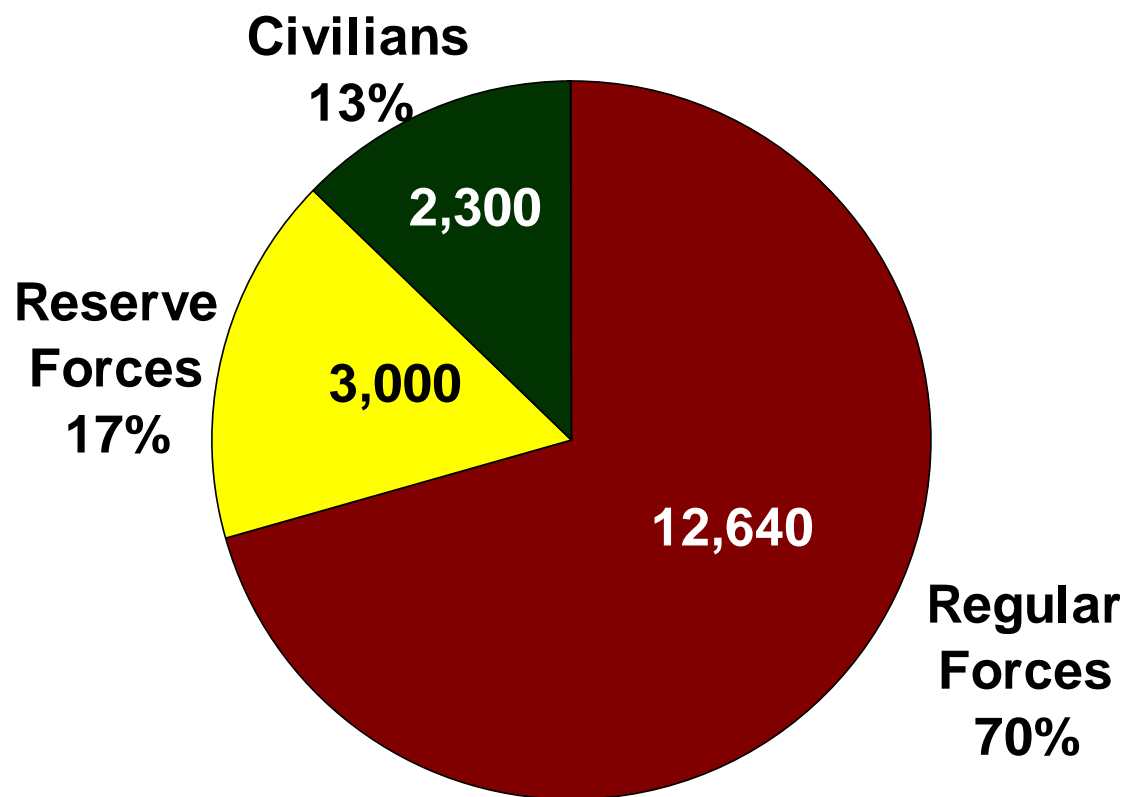
## Canadian Air Force in perspective: Lines of Operations

1. 1st Stage Training
2. Aerospace Force Application
3. Aerospace Management and Control
4. Air Demonstration
5. Air Expeditionary Support
6. Air Mobility
7. Domestic Search and Rescue
8. Intelligence, Surveillance, Reconnaissance and Control
9. Tactical Helicopters
10. Command & Control and HQ
11. Air Force Occupations employed outside  
Air Command





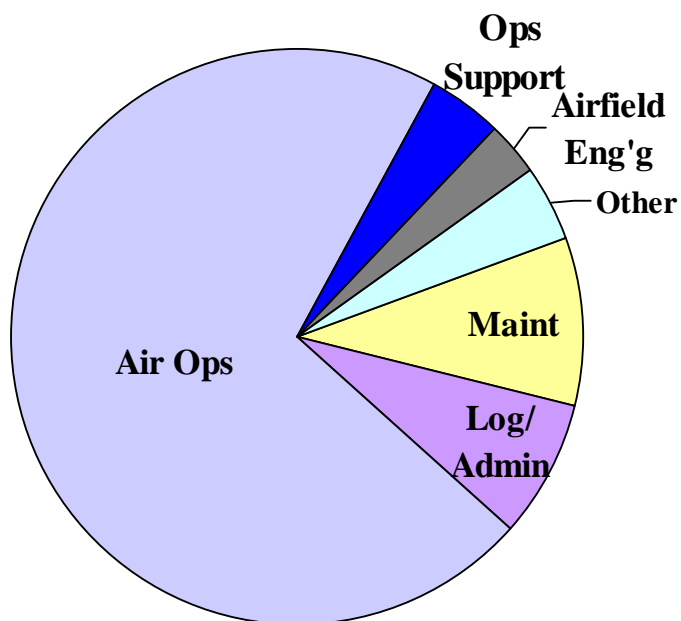
## Canadian Air Force in perspective: Air Command (CC3) Positions



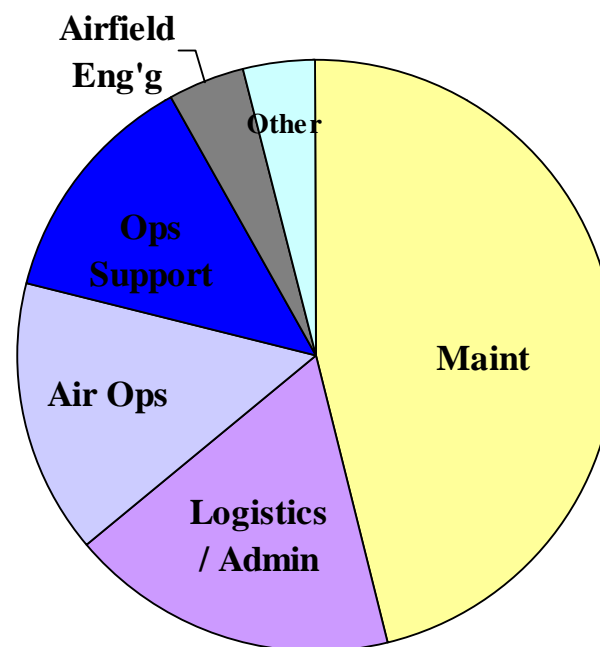


# Canadian Air Force in perspective: Regular Force Distribution CC3 (people)

**Officers** (~2600)

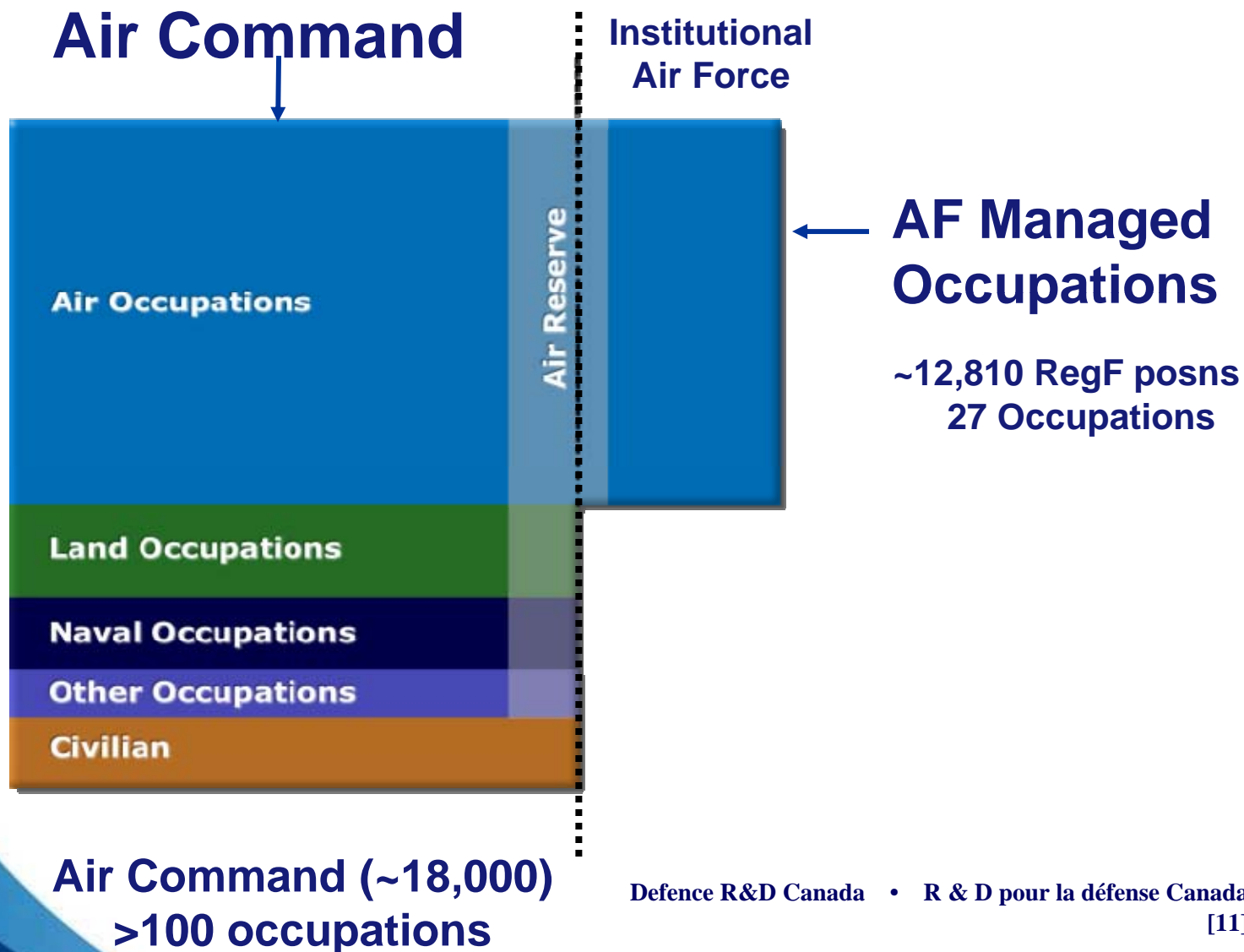


**NCMs** (~9500)





## Canadian Air Force in perspective: Views of the Establishment



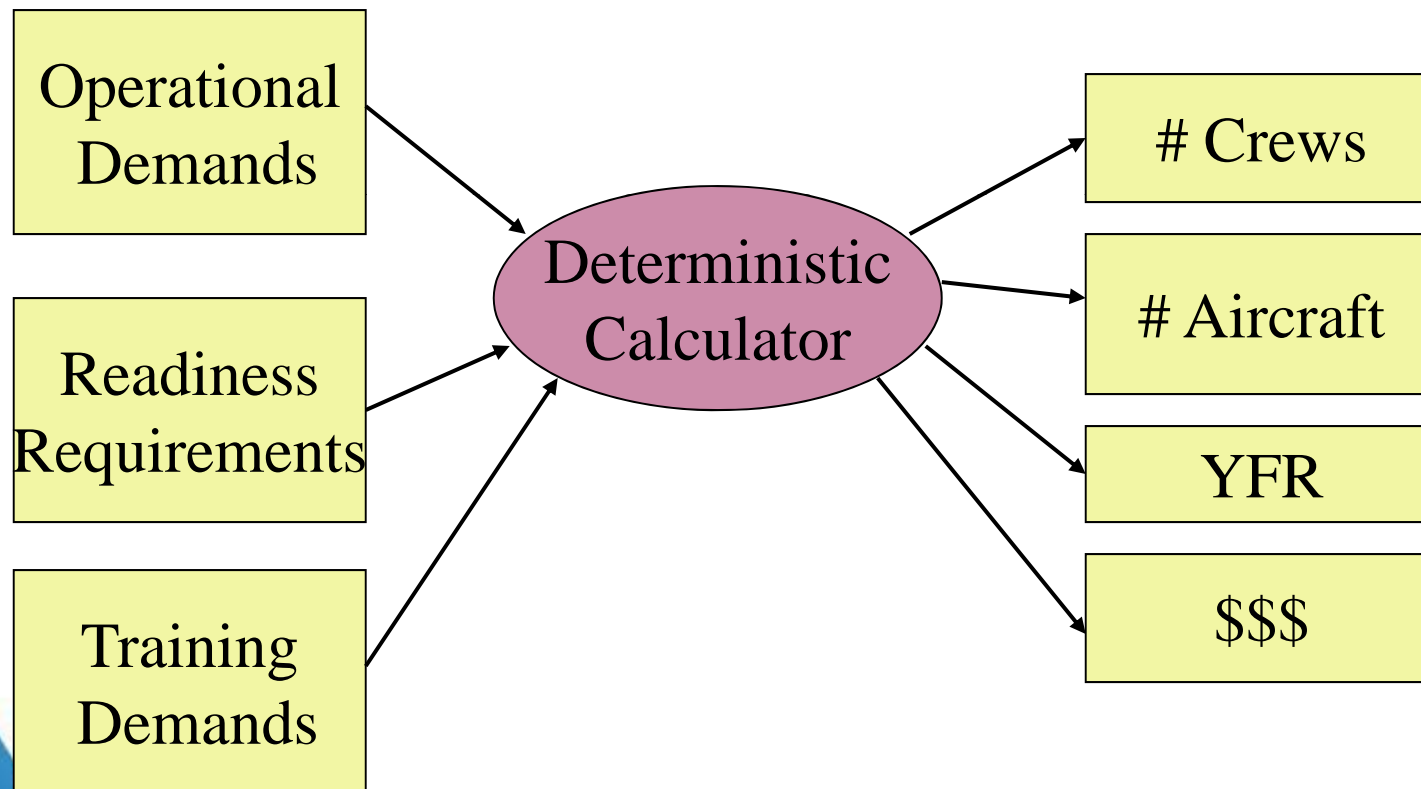


## Historical Perspective on Establishment & Tools

- 1970s to mid-90s:
  - On-Site Manpower Evaluation Reviews (OSMERs)
- 1990s: Re-engineering initiatives
  - During the period 1989 to 1999, Air Command experienced significant cuts. RegF personnel were reduced 45%; Civilian personnel reduced 69%.
  - OPRAM and ASTRA developed by Op Rsch to inform decision making
- 2000s: CF Force expansion and CF Transformation
  - Additional analyses & tool development
    - ENRAM and further development of ASTRA
    - Operational Sustainability Model
  - Project Re-balance (~2003 ) & Blue Team WG (2006/07)
- 2010s: Defence Force Structure Review, Strategic Capability Review & Strategic Review; New Aircraft fleets; Financial & Manning pressures



# ASTRA - Air Force Structure Calculator

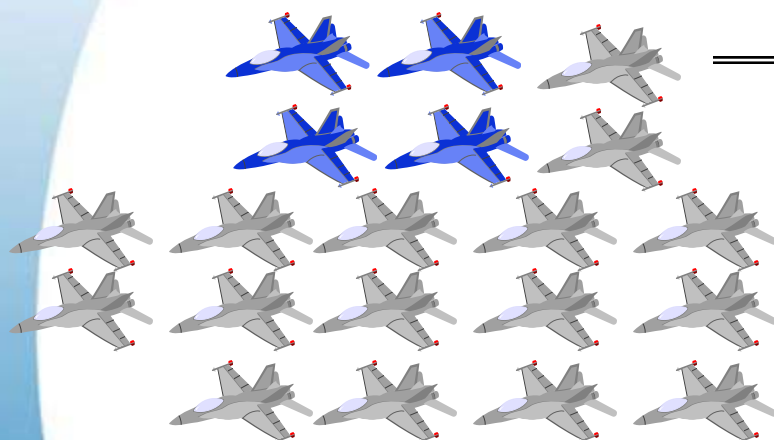




## Example – CF-18 6-aircraft formation – 24/7 operations

Aircraft Commitment

24 Pilots



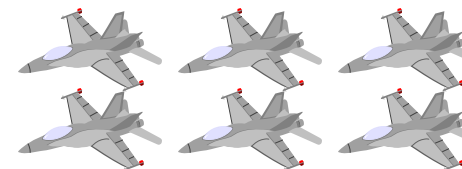
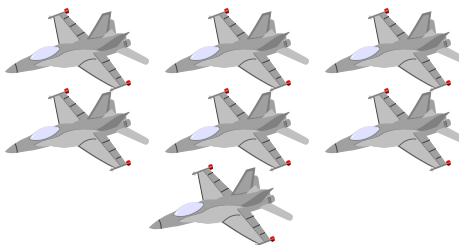
4228 Hrs

12 Instructor Pilots

Misc



Maint



Total: Fleet of 35 airframes required to stand up 4  
serviceable aircraft 24/7 on a continuing basis





## Establishment & Manning Issues

- Establishment is Suspect
  - Many years since last comprehensive review
- Manning Level Appears Problematic
  - Continuing establishment change demand
  - High level of Air Reserve Utilization
- Need to look at the future
  - Introduction of new fleets
- ~1000 fewer establishment positions allocated than the estimated requirement
- Funding is Limited
  - Regular Force growth constrained
  - Reserve, Civilian, Contractor funding limited
  - Need coordinated “Total Force” solution



## Establishment Analysis – The Need

- Validate Current Air Force Establishment
- Determine Future Air Force Establishment
  - Based on Air Force Campaign Plan
  - Both Air Command and Air Occupation Perspectives
  - Personnel required to provide target readiness and steady-state and surge capacity
  - Total Force – Reg, Res, Civilian, Contractor
- Establishment Transition Management
  - Establishment Change Plan
    - Annual Update
  - Establishment Change Management



## DGMPRA Tasking

- Research and develop a rigorous and quantitative evidence-based methodology that can be used to:
  - a) determine the Air Force's manpower establishment requirements over time, in terms of numbers and mix; and
  - b) enable trade off studies
- Identify available tools and past methodologies





## Methodology Design - Principles

- Robust, rigorous
- Transparent
- Repeatable
- Doable with limited resources and limited inconvenience to SMEs/units
- Defensible

Design Philosophy:

“Keep it as simple as possible, but no simpler”

- Albert Einstein



## Methodology – Factors to Consider (1)

- Unit / Operational Perspective:
  - Introduction of new and retirement of old platforms
  - Effectiveness / Operational capability
  - Both ‘normal’ operations and surge states
  - Readiness postures
  - Efficient use of resources
  - Secondary duties and/or “Davenport factors”
    - incl. Mat/Pat leave, medical accommodation, etc



## Methodology – Factors to Consider (2)

- Global / Aggregated perspective
  - Sustainability / health of occupations, including
    - Succession planning
    - Ship-to-shore ratios
    - Rank-to-rank ratios
  - Flexibility
  - Cost
    - Full cost of personnel
    - Allocations (Financial (SWE; O&M); Paid Strength ceiling
  - Geographic dispersion
  - Legislative and/or Flight Safety obligations



## Methodology – Factors to Consider (3)

- Data Collection Considerations
  - Position categories:
    - Hard
    - Generic or “soft”
    - Advanced Training
  - Language requirements
  - Need for
    - military, combat and/or field experience
    - Continuity & Institutional memory
  - The fact that VCDS Manning Priorities exist
  - Variability with respect to individuals
    - Difference perspectives
    - Range versus single point estimate





## **Methodology – Factors to Consider (4)**

- Time and resources available for study
- Data – availability, quality, granularity



## Framing the problem

- Large scope of problem and somewhat elusive problem definition suggests a mix of tools/approaches would best serve the project
- An interdisciplinary “meta-methodology” made up of model/analysis elements from:
  - Force Structure Analysis
  - Job / Task Analysis
  - Workforce Planning
  - Organizational Assessment/Design
    - Includes Focus groups, surveys



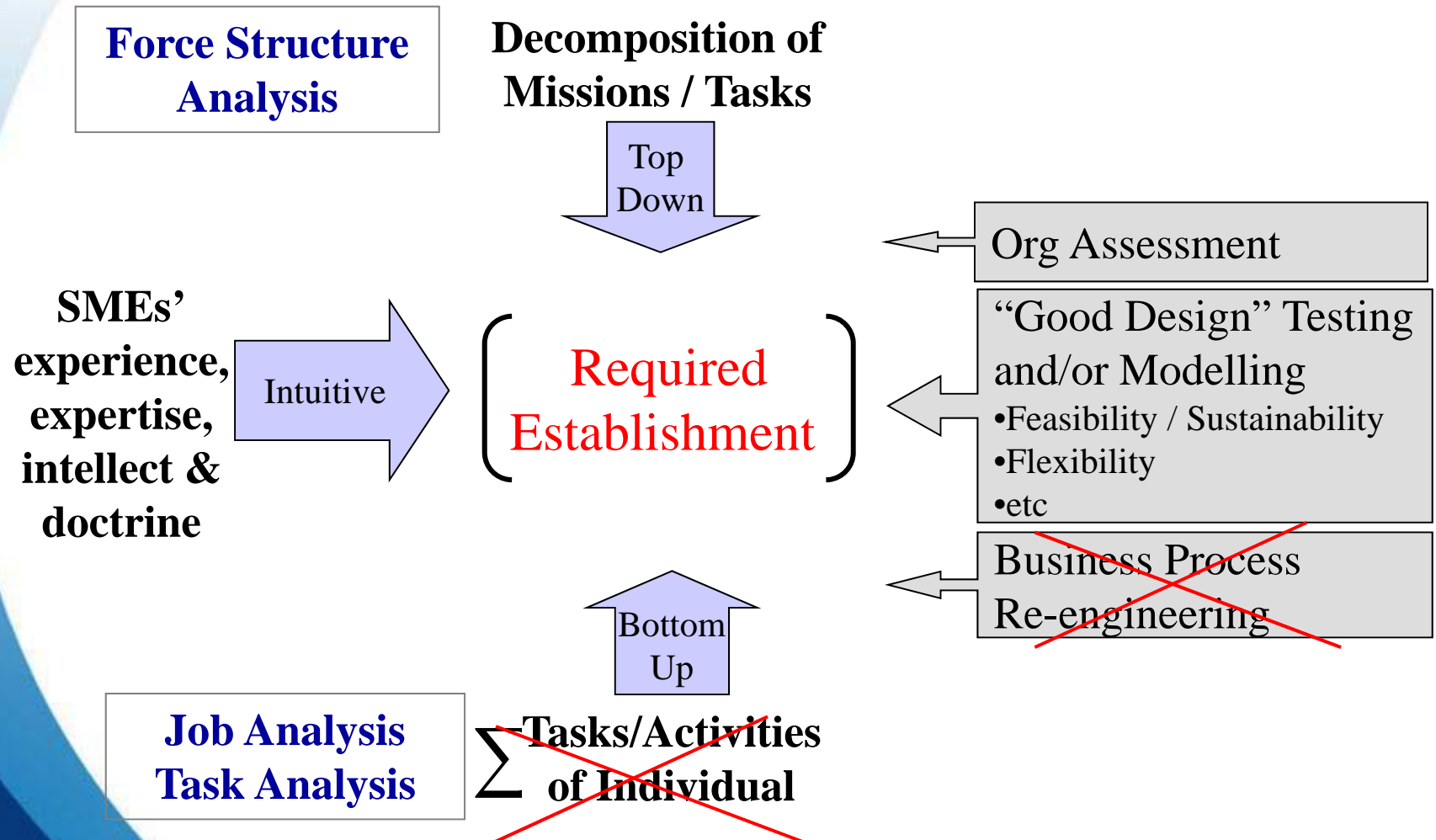


## Assumptions

- Do not need to address/analyze (at least initially):
  - Business processes
  - In-house versus contracted services
  - Occupation, in terms of whether the correct one has been chosen (other than to ask whether hard or generic, and generic grouping)

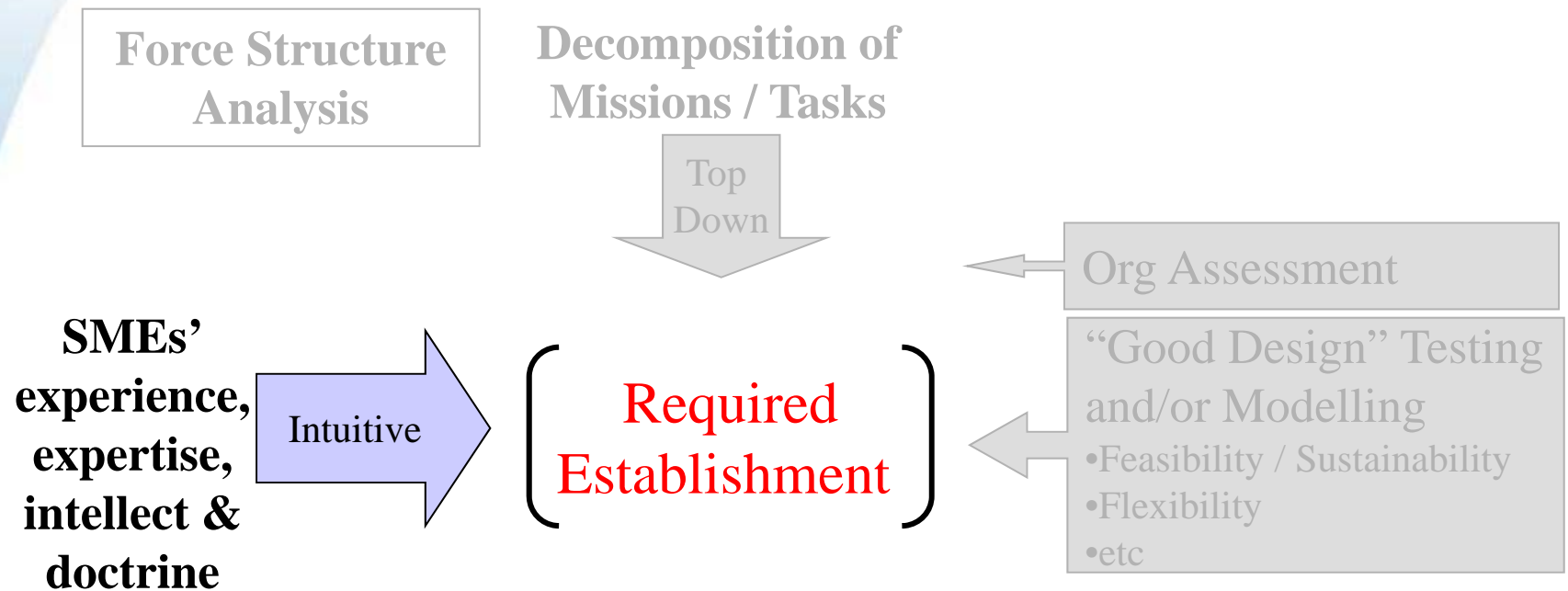


# Potential Approaches





## Proposed AF Assessment (1)

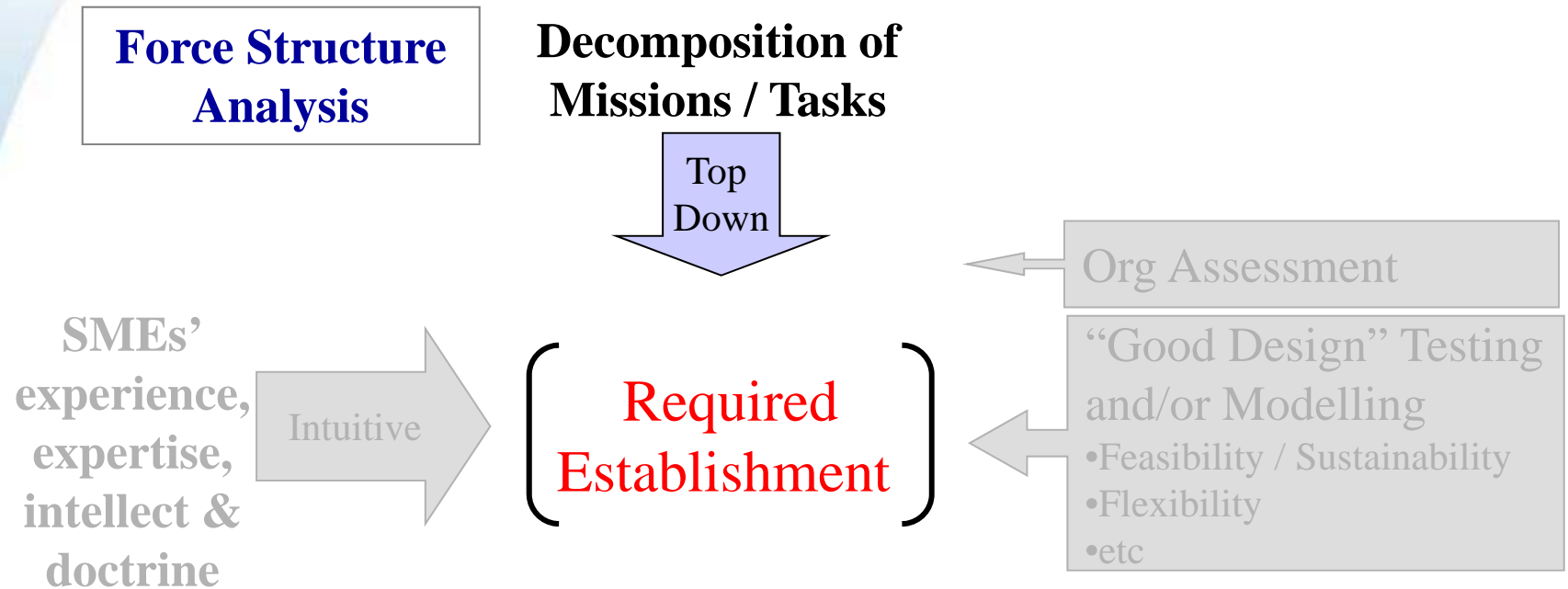


### 1. Collect Establishment-related req'ts and factors affecting workload (incl. shortfalls, mission success)

- Focus groups at Wing/unit
- Survey (i.e., Access database)



## Proposed AF Assessment (2)

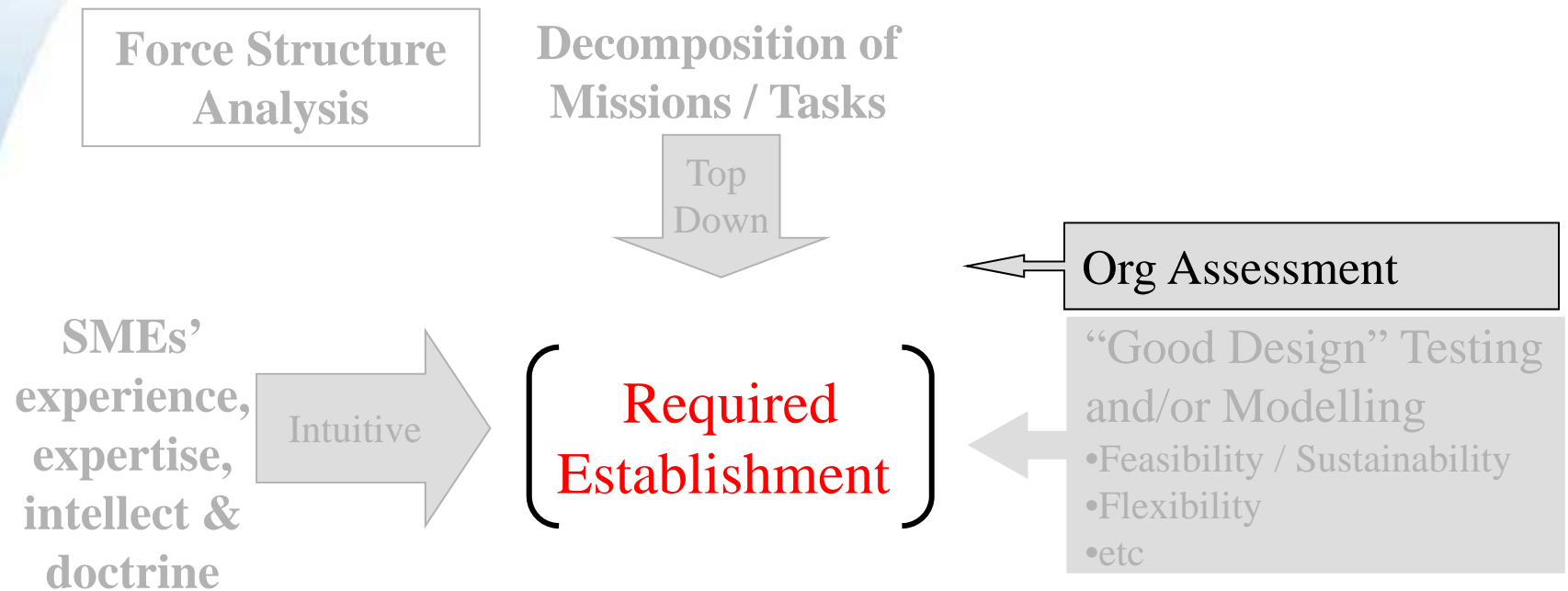


## 2. Force Structure Modelling

i.e., ASTRA, EnRAM, ORAD tool, OSM



## Proposed AF Assessment (3)



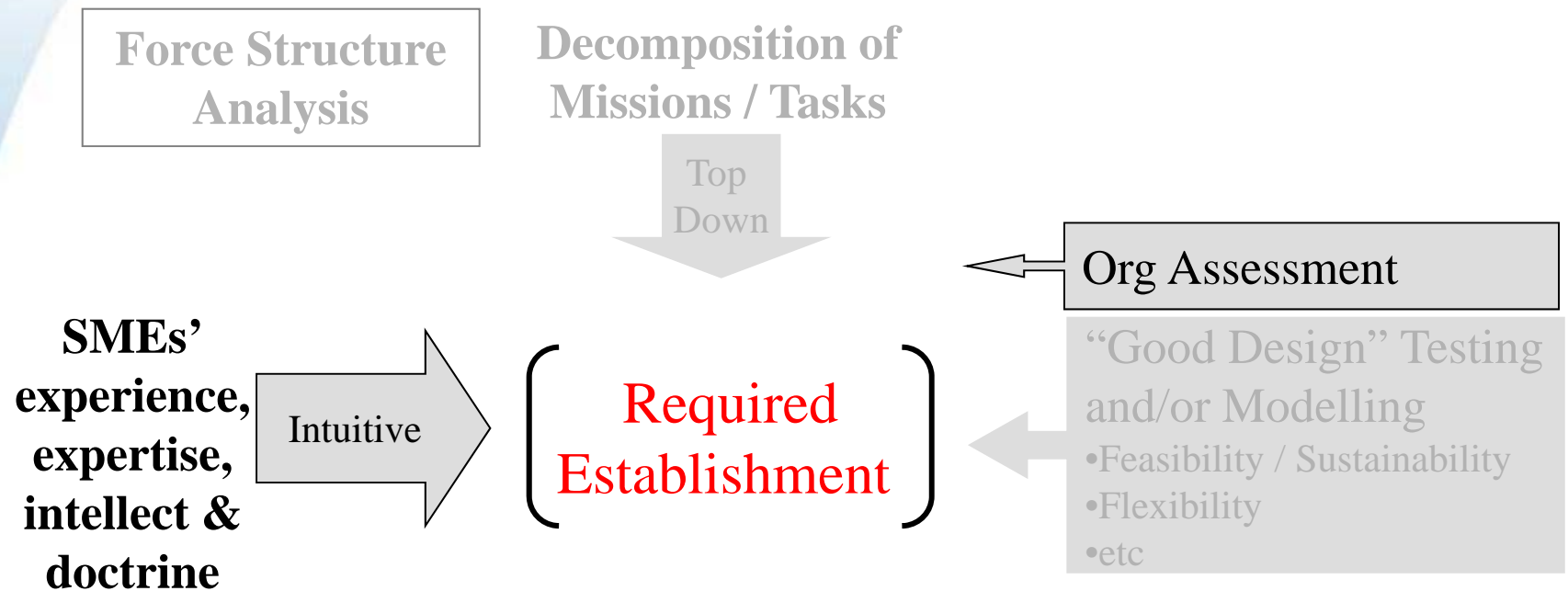
### 3. Measure Organizational Health (i.e. morale, cohesion, job satisfaction)

- Unit Morale Profile (survey)





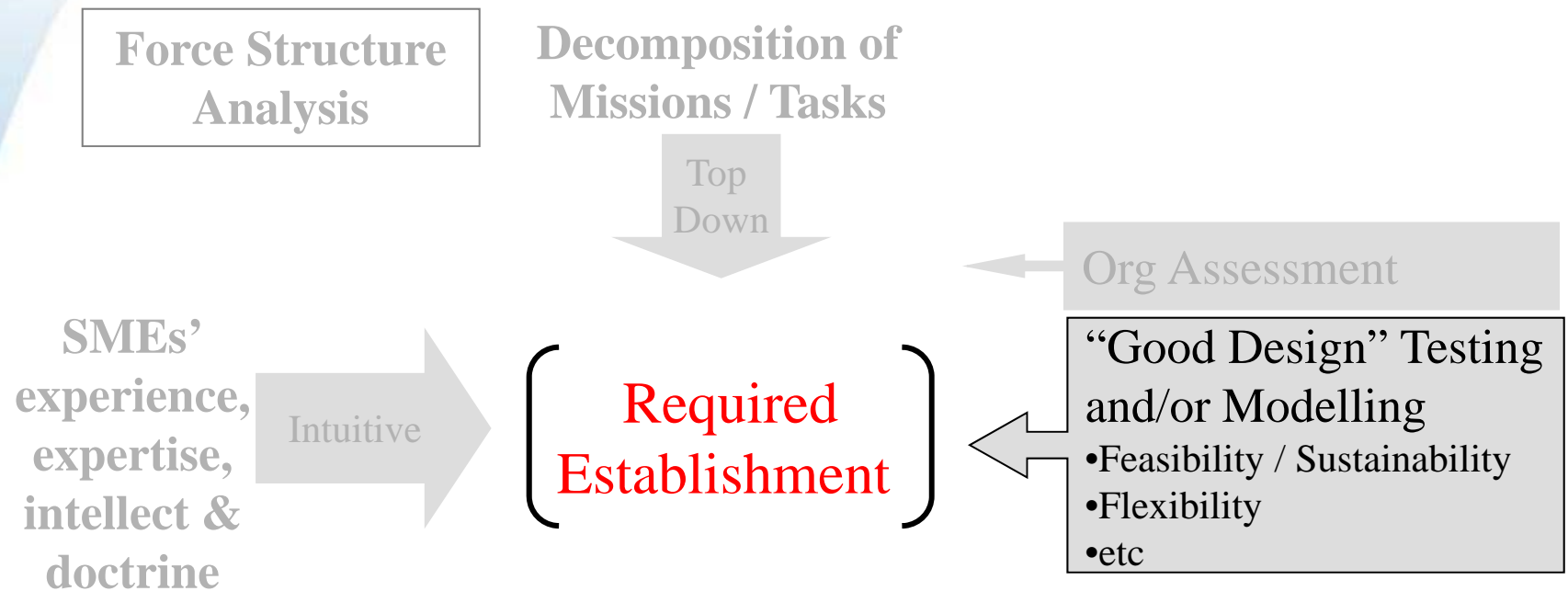
## Proposed AF Assessment (4)



**4. Collect /analyze historical establishment data, past studies (i.e. MIPs), to elicit evolution of units, set up discussion w/leaders and managers**



## Proposed AF Assessment (5)

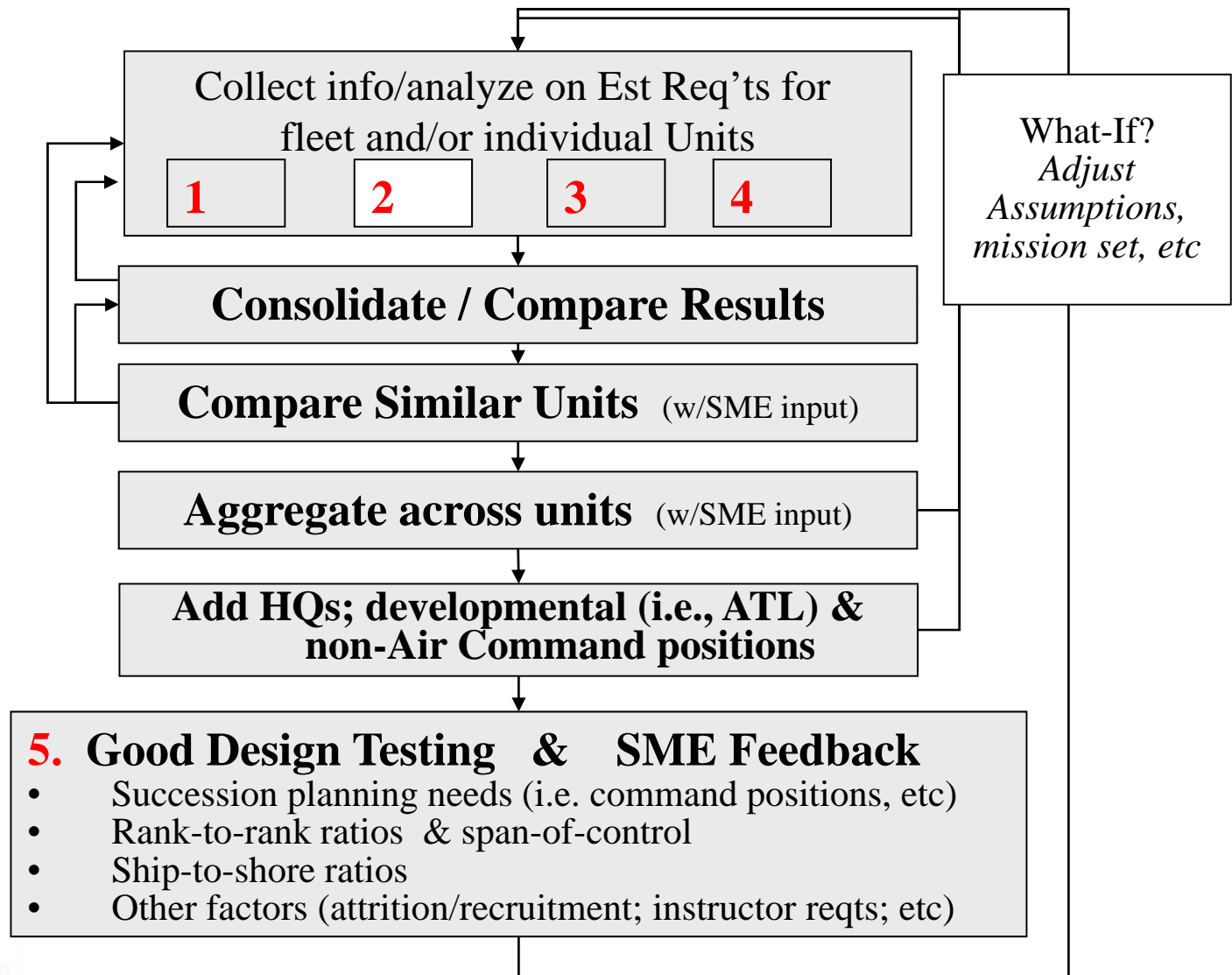


### 5. “Good Design” testing

- includes modelling and SME feedback / judgement



## Approach – Concept for Process





## Approach – Where to focus early efforts?

- “Low hanging fruit”
  - Aircrew at Operational Units
  - ASTRA Mk II: Existing & ready-to-use for aircrew, but not for Air Mobility
- Largest group
  - Maintainers (but no existing tool)
- Data collection / analysis
  - Info on relationships and drivers of workload, which is essential
  - Need to incorporate Reserves and Civilians as well as contracted services (including maintenance concepts) even if analysis initially will not specifically address mix
  - Start with one small unit and incorporate lessons learned for subsequent units



## Project Status / Proposed Way Ahead (1)

- (Proposed) Formation of dedicated research team for ~ 5 yrs:
  - *Leader:* **LCol** with knowledge of Establishment/manning issues
  - *Analyst:* **Maj** with knowledge of Establishment/manning issues as well as Human Resources Management System (HRMS)
  - *Analyst:* **Capt** to design, administer and analyse surveys and FGs at Wings
  - *Analyst:* **CWO/MWO** with ground-level experience with establishment manning issues
  - *Analyst:* **Civilian Defence Scientist** for development of tool(s) & analysis
- Limited person resources makes efficiency and clear research plan essential!



## Project Status / Proposed Way Ahead (2)

- Data Gathering
  - What do we know from past studies?
    - Find & utilize findings from any related AF studies
    - Use results of prior application of OR tools
      - Force structure studies (i.e., ASTRA, EnRAM)
- What Op Research tool(s) to use and/or develop?
  - Decision/discussion about tools, their strengths/weaknesses/resources & timelines
  - Coordinate resources and responsibilities between military and Op Researchers (CORA, DGMPRA)



## Timelines for the Way Ahead...

- **Very short-term:** Feedback from MORS WG3; Wing visits and focus groups beginning this week; decisions on OR tools to be made; laying foundation for...
- **Short-term:**
  - Refinement of focus group moderator's guide, survey for data collection, methodology, and implementation plan;
  - Continued analysis where possible;
  - Start development of/preparation for other models, incl. ASTRA MkIII;
- **Medium-term:**
  - determination of how modelling results will be used in conjunction with focus group/survey results;
  - ongoing collection of data, model development and analysis
  - assess gaps with data, models or analysis (iterative)
- **Longer-term:** start using ASTRA Mk III for additional insight





# Questions? Feedback? Tools?



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